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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/816,386	04/01/2004	Frankie Fariborz Roohparvar	400.168US02	9377
7590 09/27/2004			EXAMINER	
Leffert Jay & Polglaze, P.A.			HO, HOAI V	
P.O. Box 581009			ART UNIT	
Minneapolis, MN 55458-1009			PAPER NUMBER	
			2818	

DATE MAILED: 09/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/816,386

Applicant(s)

ROOHPARVAR, FRANKIE  
FARIBORZ

Examiner

Hoai V. Ho

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM  
THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 16 August 2004.  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.  
4a) Of the above claim(s) 1-6 is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 7-9 and 11-20 is/are rejected.  
7) ☒ Claim(s) 10 is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 10 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 4/10/04.  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: \_\_\_\_\_.

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1. This office acknowledges receipt of the following items from the Applicant:  
  
Information Disclosure Statement (IDS) was considered.  
  
Papers submitted under 35 U.S.C. 119(a)-(d) have been placed of record in the file.
2. Claims 7-20 are presented for examination.

***Election/Restriction***

3. Claims 1-6 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention/species, there being no allowable generic or linking claim. Election was made **without** traverse filed on August 16, 2004.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 7, 8 and 12-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sofer et al. U.S. Patent No. 6643181.

Per claims 7 and 12-20, Sofer, starting at column 2, line 63 to column 3, line 4, discloses a method of erasing a flash memory cell comprising: applying a negative voltage (col. 6, lines 35-38) to a control gate of the flash memory cell; and applying a series of positive voltage pulses (col. 6, lines 38-41) to a source (drain) of the flash memory cell, wherein a current

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limit of the positive voltage pulses increases based upon the number of positive voltage pulses applied (col. 2, line 64 to col. 3, line 4). See also col. 2, lines 21-25.

Sofer discloses that applying a series of positive voltage pulses to the drain instead the source as the claimed invention. However, Figure 1 of Sofer shows that the source (BL) and the drain (BL) can be interchanged. Therefore, it would have been obvious to a person of ordinary skill in the art at the time invention was made would have found it obvious the source and the drain can be interchanged in the MOSFET technology.

As per claims 8 and 12, Sofer discloses the positive voltage pulses have a potential up to about 5 volts (col. 6, lines 38-40) and the negative voltage is -5 to -7 volts instead of -10 to -17 volts as the claimed invention. However, one of ordinary skill would have found it obvious that the claimed range and the prior art are close enough that one of ordinary skill in the art would have expected them to have the same function for erasing the flash memory cell.

6. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sofer et al. U.S. Patent No. 6643181 in view of Chonan U.S. Patent No. 54683588 (IDS).

Sofer discloses all the subject matter claimed except for wherein the potential of the positive voltage pulses is generated using parallel voltage pump circuits each having a plurality of series coupled pump stages.

However, Figure 1 of Chonan discloses the potential of the positive voltage pulses is generated using parallel voltage pump circuits each having a plurality of series coupled pump stages. It would have been obvious to a person of ordinary skill in the art at the time invention was made to modify Sofer's pump circuit which has a plurality of series coupled pump stages as

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taught by Chonan in order to reduce a power consumption in the flash memory cell (col. 4, lines 18-21).

7. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sofer et al. U.S. Patent No. 6643181 in view Wooldridge U.S. Patent No. 6515909.

Sofer discloses a drain connection is floating (col. 6, lines 40 and 41) except in silence for applying a ground potential to a substrate. However, Wooldridge discloses applying the ground potential to the substrate (col. 1, line 58 or col. 7, lines 44-45). It would have been obvious to a person of ordinary skill in the art at the time invention was made to modify Sofer's flash memory cell by connecting its substrate to the ground potential as taught by Wooldridge in order to reduce the charge in the floating gate and the electrons in the floating gate are induced during the erasing operation (col. 1, lines 54-65).

8. The prior art made of record and not relied upon is considered pertinent to applicants' disclosure.

#### **Allowable Subject matter**

9. Claim 10 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

10. The following is a statement of reasons for the indication of allowable subject matter:

Claim 10 includes allowable subject matter since the prior art made of record and considered pertinent to the applicant's disclosure, taken individually or in combination, does not teach or suggest the claimed invention wherein the parallel voltage pump circuits are selectively activated using an output count of a pulse counter.

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11. When responding to the office action, Applicants are advised to provide the examiner with the line numbers and page numbers in the application and/or references cited to assist the examiner to locate the appropriate paragraphs.

12. A shortened statutory period for response to this action is set to expire 3 (three) months and 0 (zero) day from the date of this letter. Failure to respond within the period for response will cause the application to become abandoned (see MPEP 710.02 (b)).

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hoai V. Ho whose telephone number is (571) 272-1777. The examiner can normally be reached on 7:00 AM -- 5:30 PM from Monday through Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on (571) 272-1787. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



hvh  
September 22, 2004



Hoai V. Ho  
Primary Examiner  
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